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GEOGRAPHICAL RECORD

AMERICAN GEOGRAPHICAL SOCIETY

Intermonthly Meeting of February. An intermonthly meeting of the American Geographical Society was held on Tuesday evening, February 12, at the Engineering Society's Building, 29 West Thirty-ninth Street. President Greenough presided. The lecture for the evening was entitled ''Fighting Above the Clouds'' by Professor Charles Upson Clark, Director of the School of Classical Studies of the American Academy at Rome. The lecture dealt with Italy's part in the war and was illustrated by lantern views and by motion pictures of the fighting in northern Italy.

NORTH AMERICA

Seattle, the Fourth Port of the United States. During 1917, according to the *Industrial News Survey* (published by the National Industrial Conference Board, Boston) for the week of December 31, 1917, to January 7, 1918, Seattle passed San Francisco in the value of her foreign trade, which amounted to $600,000,000, thereby taking rank as the fourth port of the United States. This marked advance is due, of course, to the present abnormal conditions. War has revolutionized shipping routes. Supplies for the Russian armies constituted a large part of Seattle's exports (Abraham Berglund: The War and Trans-Pacific Shipping, *Amer. Econ. Rev.*, Sept. 1917). But her admirable geographical situation fits Seattle to maintain the position she has reached. Located at the most advantageous point in an extensive network of waterways, with sufficient depth of harbor and convenient dockage, within easy reach of a productive district, a position of local prominence was early assured her. Lumber and fish constituted the first important trade. Forest products were in demand along the entire west coast of North and South America. The cities on the treeless Peruvian and Chilean coasts and even far interior towns of the Andes called for the pine of Washington's forests. Railroads, when they came, made the entire Northwest a hinterland for Seattle, while no point was so well situated as a gateway to the gold and fur-bearing regions of Alaska. When commerce with the Far East was opened up Seattle was ready to offer the shortest route by which wheat and manufactured articles from the northern United States could be exchanged for the products of the Orient (see W. M. Gregory: The Growth of the Cities of Washington, *Journ. of Geogr.*, May, 1916). The heavy war shipments to Asiatic Russia have now made her America's foremost Pacific port.

The Labrador Eskimos. Of the widely distributed Eskimo race only the Central and North Greenland tribes still retain their indigenous culture unaffected or but slightly affected by contact with a higher civilization (see Diamond Jenness: The Copper [or Central] Eskimos, *Geogr. Rev.*, August, 1917). Westward the Alaskan Eskimo has greatly modified his mode of life during the last thirty-five years (*idem:* The Eskimos of Northern Alaska, *Geogr. Rev.*, February, 1918); on the eastern side of the continent, in South Greenland and Labrador, contact between the white man and the Eskimo is of comparatively ancient date. Some of its consequences for the latter group are presented by E. W. Hawkes in a memoir entitled ''The Labrador Eskimo'' (*Geol. Surv. of Canada Memoir 91: Anthropol. Series No. 14,* Ottawa, 1916).

Today the Labrador Eskimo is found on the Atlantic seaboard from Hamilton Inlet northward, in groups about the trading posts and scattered along the shores of Ungava Bay, and dispersed along the desolate eastern shores of Hudson Bay. Practically all the Eskimos on the Atlantic coast of the peninsula are gathered into the six Moravian missions and are directly under mission control. To this circumstance they largely owe their existence, for in eastern Labrador the Eskimo has felt the rude contact with white civilization more keenly than elsewhere. When the French arrived in the Gulf of St. Lawrence they found the Eskimo ranging as far west of Mingan (64° W.). Between the newcomers, aided by the Montagnais Indians, whom they supplied with guns, and the Eskimos strife was constant and the Eskimos were forced to retreat. The same policy was maintained by the British until the wise Palliser, governor of Newfoundland in the latter half of the eighteenth century, adopted a conciliatory attitude towards them. When the Moravian Mission began work on the coast at this same period the Eskimos were estimated at 3,000. As they disappeared from the south—today with the exception of a few individuals in Sandwich Bay there is no pure-blood Eskimo south of Hamilton Inlet—the numbers at the missions increased. The mission stations, it should be remarked, were wisely placed in the best hunting grounds. By 1840 there were 1,034 Eskimos at the four stations. Since that date the numbers have not varied greatly; they have fluctuated with epidemic and famine, but the general level has been maintained; in 1913 it was about 1,250.

The missions have protected the native from the exploiting white and they have encouraged him to continue to live in native fashion as regards food, clothing, etc. But change in religious and social ideas renders inevitable some change in material culture. The fundamental occupations remain the same; the details of their operation have been modified. The whale-boat has replaced the umiak; the bow and arrow has been superseded by the rifle; cod fishing has taken the place of salmon in native economy; the art of building snow houses is entirely forgotten south of Hopedale and is only retained in the north by judicious fostering; canvas has replaced skins for tents. Today the culture of eastern Labrador is hybrid; it is an Eskimo culture adapted to white ideas. To find a typical Eskimo group one must go into Hudson Strait or Bay.

The Unexplored Areas of Continental Canada. Synopses of our present state of knowledge of the topography of a given portion of the earth's surface are always valuable because they show at a glance, especially if represented on a map, what has been done and what remains to be done. A recent admirable example is Frank Cana's map of Africa, 1:20,000,000 (*Geogr. Journ.*, Vol. 38, 1911), which indicates the state of exploration of that continent in five grades of completeness. A similar inquiry with regard to Canada has recently been undertaken by Charles Camsell of the Canadian Geological Survey (The Unexplored Areas of Continental Canada, *Geogr. Journ.*, Vol. 48, 1916, pp. 249-257). The investigation is wisely restricted to continental Canada inasmuch as insular Arctic Canada, as Stefansson's recent discoveries show (see below), is not entirely revealed as yet and even the coasts of long-known islands are not laid down accurately or are totally undetermined (for example, Southampton Island, see *Bull. Amer. Geogr. Soc.*, Vol. 42, 1910, map facing p. 84, and Vol. 45, 1913, map on p. 576; and Baffin Island, for most of the west coast of which we are still dependent on the Eskimo maps published in the narrative of Hall's second expedition). To determine the unknown areas Mr. Camsell assumes a strip 15 miles wide on each side of an explored route to be known. The areas remaining between the resulting 30-mile bands representing the network of explored routes constitute the unknown areas. The author does not mean to imply that these areas have never been visited; but the travelers who entered or crossed them made "no reasonably accurate surveys" or left "no records of the geography, life, or general character of the region traversed." No area of less than 4,000 square miles is included. The areas were, according to a communication from Mr. Camsell to this Society, originally plotted and measured planimetrically on the standard base map of Canada, 1:2,217,600, published by the Department of the Interior, Ottawa. A reduction was then made and sent with the article. The map was, however, not published in the *Geographical Journal.* Subsequently Mr. Camsell on request kindly furnished this Society with an approximate copy on the base map of Canada in 1:6,336,000, and from this the accompanying map (Fig. 2) was made. These details are entered into in order to afford a criterion as to the method followed.

Mr. Camsell's paper naturally calls to mind a similar inquiry made twenty-six years before by the late Dr. George M. Dawson, Director of the Geological Survey of Canada (On Some of the Larger Unexplored Regions of Canada, *Ottawa Naturalist,* May, 1890, 12 pp., with map in 1:27,000,000; reprinted, with map, as Appendix 1, pp. 277-289, of Warburton Pike's "The Barren Ground of Northern Canada," London, 1892). In this the known strip of territory on each side of the traveled routes was taken to be 25 miles wide. "All ...... traveled routes along which reasonably satisfactory explorations have (had) been made and of which fairly accurate route-maps are (were) in existence" were taken into consideration. The smallest area outlined is 7,500 square miles in extent. A comparison of the two synopses is of interest. Dawson's map is reproduced herewith (Fig. 1) on the same scale and base as Camsell's. It should be remarked that Dawson's published map is on a small scale and poorly engraved, the underlying base being quite inaccurate in geometrical outline. However, the original plotting and computation were evidently made on a large-scale map, which was displayed by the author at the lecture of which the paper is the printed form. In view of Dr. Dawson's well-known accuracy, no doubt need therefore be entertained as to the correctness of the figures which he gives for the unexplored areas. His areas, and Mr. Camsell's, are here as far as possible correlated in tabular form. The numbers of the various blocks are those assigned them in the original papers and correspond with the numbers on Figures 1 and 2. Equivalent areas are listed as far as possible opposite each other.

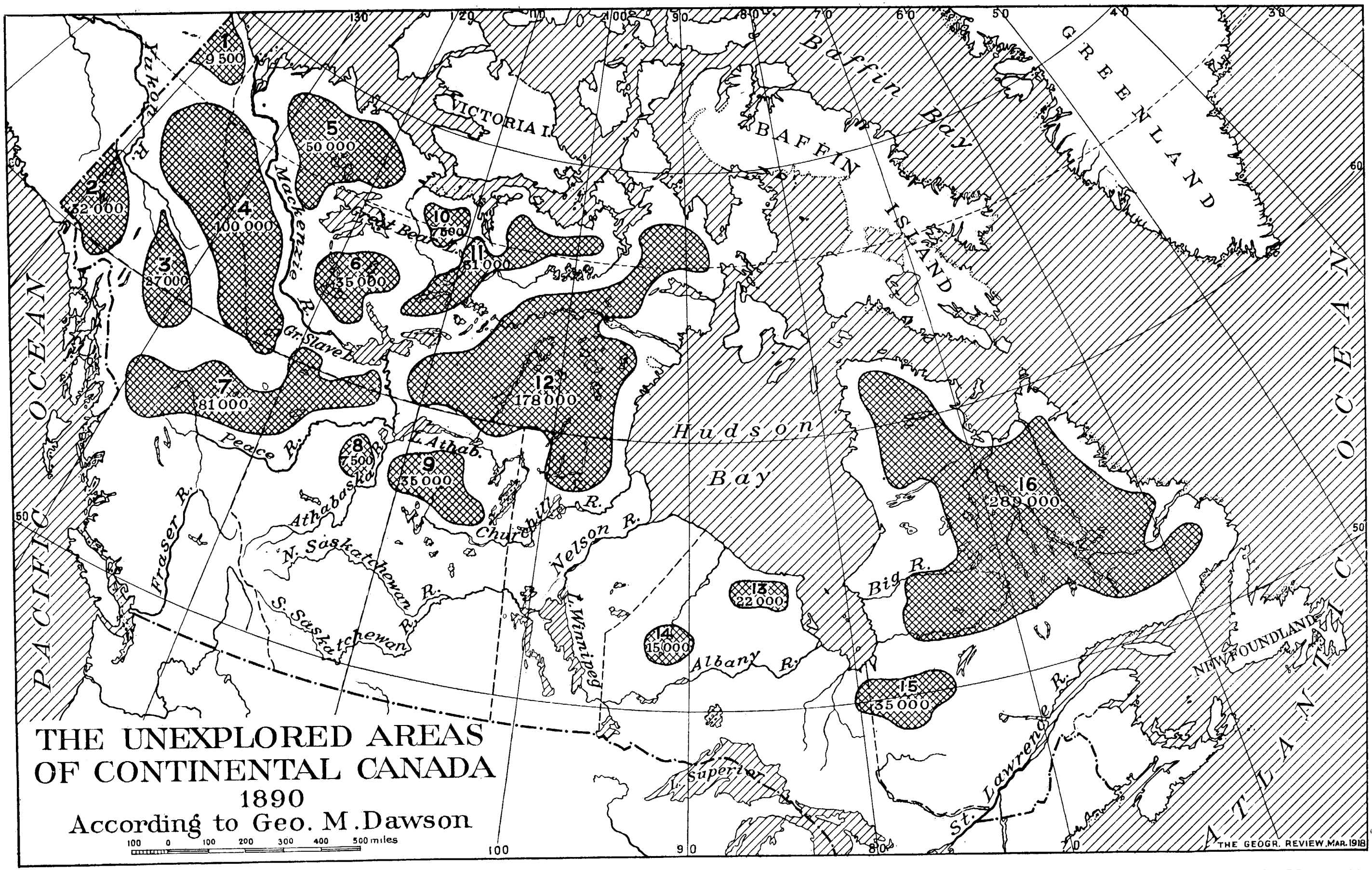

FIG. 1—The unexplored areas of continental Canada in 1890, according to G. M. Dawson. Scale, 1:30,000,000. (Copied from the author's map in the May, 1890, *Ottawa Naturalist.*)

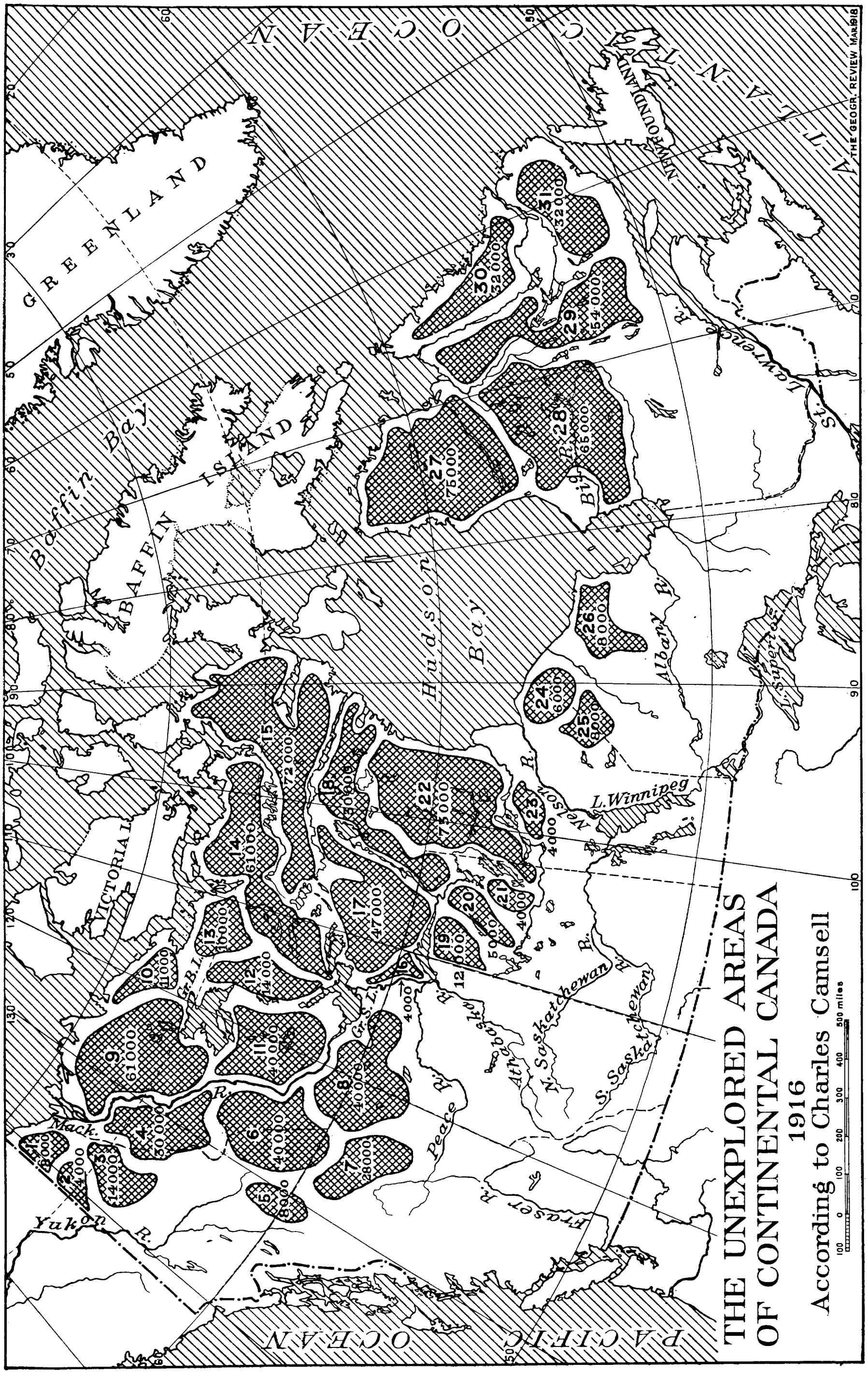

FIG. 2—The unexplored areas of continental Canada in 1916, according to Charles Camsell. Scale, 1:30,000,000. (Copied from manuscript map in 1:6,336,000 furnished the Society by Mr. Camsell.)

Unexplored Areas of Continental Canada

	Dawson, 1890			*Camsell, 1916*	
	AREA	SQ. MILES		AREA	SQ. MILES
1	N of Porcupine R.	9,500	1	N of Porcupine R.	8,000
			2	W of Porcupine R.	4,000
2	SW of Lewes and Yukon Rs.	32,000			
3	Between Lewes, Pelly, and Stikine Rs.	27,000	5	W of Dease and Francis Rs.	8,000
4	Between Pelly and Mackenzie Rs.	100,000	3	W of Peel R.	14,000
			4	E of Peel R.	30,000
			6	N of Liard R.	40,000
7	Between Stikine-Liard and Skeena-Peace Rs.	81,000	7	W of Ft. Nelson R.	28,000
			8	N of Peach R.	40,000
5	NW of Great Bear L.	50,000	9	NW of Great Bear L.	61,000
			10	N of Great Bear L.	11,000
6	S of Great Bear L.	35,000	11	S of Great Bear L.	40,000
8	Between lower Peace and Athabaska Rs.	7,500			
			12	W of Coppermine R.	14,000
10	NE of Coppermine R.	7,500	13	NE of Coppermine R.	10,000
11	N of Great Slave L. and Back's R.	31,000	14	N of Great Slave L. and Back's R.	61,000
12	Between Back's R. and Hudson Bay	178,000	15	S and E of Back's R.	72,000
			17	N of L. Athabaska	47,000
			16	E of Slave R.	4,000
			18	E of Dubawnt R.	30,000
			22	E of Kazan R.	73,000
9	SE of L. Athabaska	35,000	19	S of L. Athabaska	12,000
			20	E of Cree R.	5,000
			21	W of Reindeer L.	4,000
			23	S of Churchill R.	4,000
			24	SE of York Factory	6,000
			25	NE of Island L.	8,000
13	NW of Attawapiskat R.	22,000	26	SE of Winisk R.	8,000
14	Headwaters of Severn R.	15,000			
15	SE of James Bay	35,000			
16	Interior of Labrador	289,000	27	W of Ungava Bay	75,000
			28	N of Eastmain R.	65,000
			29	E and S of Kaniapiskaw R.	54,000
			30	E of George R.	32,000
			31	S of Hamilton R.	32,000
	Total, in round numbers,	950,000		Total, in round numbers,	900,000

A glance at the two totals as well as at the maps shows that, apparently, after a lapse of a quarter-century the unexplored area is hardly less than it was before. This is of course due to Dr. Dawson's assuming a wider strip as known than Mr. Camsell. A measurement of the perimeters of Mr. Camsell's areas on his map in 1:6,336,000 has shown that this factor accounts for 250,000 square miles. The comparable totals are therefore, Dawson, 950,000; Camsell, 650,000—which better expresses the progress of exploration in the intervening time. The main inroads that have been made into the unknown areas of 1890 relate to the upper Yukon region, where the development of the Klondike gold fields has brought scientific exploration in its train, and to Labrador and the block between Great Slave Lake-Back's River and Hudson Bay, both of which have since been crossgrained by route surveys.

The present unexplored areas belong, according to Mr. Camsell, to three types of country. By far the largest portion—two-thirds—lies in the Laurentian Plateau, that vast area of ancient rocks that extends in U-shape around Hudson Bay from the Atlantic coast of Labrador to the line of great lakes consisting of Winnipeg, Athabaska, Great Slave, and Great Bear—Suess's "Canadian Shield." Its rocky, lake-studded surface makes it unsuited to agriculture, even where climatic conditions are not prohibitive, as they are in the north, where the coniferous forest gives way to the open Barren Grounds—the American tundra. Mineral resources are the main asset of this region. The second type of country is represented by the great central plains of the continent, which here, in their northern section, narrow down from a width of 1,000 miles in the latitude of Winnipeg to some 200 miles across the middle Mackenzie. About 110,000 square miles of the unexplored regions on both sides of the Mackenzie are of this type. This includes the areas in Figure 2 numbered 8 and 11 and parts of 4 and 9. Some of this area is probably suited to agriculture, especially the block lying north of the Peace River and west of Great Slave Lake. The third type is that of the Cordillera. This includes the blocks lying west of the Fort Nelson, Liard, and Mackenzie Rivers numbered 1, 2, 3, 5, 6, 7, and the greater part of 4 and covers some 130,000 square miles. The chief value of this area probably lies in its mineral resources, although, because of the disturbances incident on mountain structure, it is less easy to forecast its geology than it is that of the Laurentian Plateau.

SOUTH AMERICA

Settlement of the Amazon Basin Through Reformed Methods of Rubber Gathering. According to a statement in an article on "Brazil's Expansion of Manufacturing" in the January, 1918, number of *The Americas* (published by the National City Bank of New York) the Amazon states of Brazil are attempting to reform the prevailing system of gathering rubber. At present a company sends its expeditions up along a stream carrying all their supplies with them. The rubber on each side of the rivers is exploited, but for only a short distance from shore. Nothing but temporary quarters need be erected, except at river junctions or other strategic points. The reform aims to establish permanent colonies where land would be cleared and provisions raised. Such a plan should make it possible to smoke rubber under better conditions and so improve the quality of the Pará shipments. If the scheme were carried out successfully roads and railroads would soon be required. This would result in the opening up and extensive development of that vast interior country upon which civilization has secured so feeble a hold. In the four centuries during which Europeans have repeatedly penetrated the remote regions of the Amazon Basin, they have succeeded in establishing only attenuated lines of riparian settlements, while the wide interfluvial areas have remained undeveloped. The reform being attempted is one of various projects by which Brazil hopes to obtain permanent settlements in her interior provinces.

Cheese Production, A New Industry in Argentina. Though the people of Argentina own nearly 30,000,000 head of cattle (about four per capita) and use thousands of square miles for pasture lands, there has been very little dairy business in the country until recent years. Except in the cities milk and butter were almost unknown. European countries supplied the foreign residents with condensed milk and tinned butter, while cheese came from the same source, in largest quantities from Italy. The Argentine herds were used almost solely for their meat, hides, and bones and for the supply of draft oxen. According to the *Revista de Economía y Finanzas* of Buenos Aires for November 5, 1917 (p. 16), this condition has suddenly changed, especially as regards the production of cheese. The native factories produced 7,800,000 kilograms more in 1917 than in 1913. Last year the balance swung from large importations to considerable exportations. While in 1916 there were 1,421,246 kilograms of cheese imported and only 227,711 kilograms exported, in the first half of the past year 1,399,101 kilograms were exported and but 249,432 kilograms imported. This situation has been brought about partly by the abnormal trade conditions created by the war. Europe has been unable to supply the foreign markets with dairy products. According to *Commerce Reports* for November 26, 1917 (p. 772) European countries sent just 99 pounds of cheese to the United States in August last as against a monthly average in 1914 of about 5,300,000 pounds. The United States is now exporting this commodity to fifty foreign countries. Argentine cheese producers, already supplying the demands of their domestic market, are taking advantage of this revolution in trade conditions and are replacing some of the European exporters. In August, as shown by the report mentioned, 448,000 pounds of Argentine cheese came into the United States. The year before not a single pound had come.

The climate of Argentina is not well suited, in some respects, to the dairy business. The supply of natural pasturage is made uncertain by recurring periods of severe drought, such as that of 1916. The rainfall on the pampas is so light that grasses are usually hard and coarse. There are sudden extreme fluctuations of temperature and humidity. But in spite of these disadvantages the more intensive development of the great *estancias*, introduction of the best foreign breeds of cattle, denser settlement of rural districts, great improvement in transportation, and the demands of domestic and foreign markets have made possible the rapid growth of the industry. Aside from its commercial aspect this is significant in that it marks the passing of the primitive nomadic pastoral life of gaucho days and the advent of a settled population with its characteristic industries.

EUROPE

The Climate of the Western War Zone. The importance of meteorological controls over military operations has naturally stimulated interest in the climate and weather of the various war zones. The interest in the climate of Belgium and of eastern France has been greatly intensified since the advent of American troops in Europe. Questions concerning the cold and the heat, the snow and the rain on the western front are more and more frequently asked. In order to answer such inquiries, Mr. P. C. Day of the U. S. Weather Bureau has prepared some ''Notes on the Climate of France and Belgium'' (*Monthly Weather Rev.,* October, 1917). Special emphasis is laid upon comparisons between conditions abroad and those in the United States. Temperature and precipitation curves and charts are given for selected stations in France, Belgium, and the United States, and numerous tables carry the comparisons farther. The essential climatic facts for the western war zone are the relatively warm winters, considering the high latitude; the relatively cool summers; and the moderate annual amount of precipitation, with frequent rainfalls. The coldest weather on record in northern France ranges from about 0° F. to —10° F., but there is no such intense cold as is characteristic of the interior and northern portions of the United States. Again, in summer, the mean temperatures (July and August) are only 63° to 65°, and in most of northern France and in Belgium single temperature readings of 100° have never been reported.

The rainfall on the lowlands is between 20 and 30 inches. In the Vosges it reaches 60-70 inches. A fairly even distribution through the year is the general characteristic, with a not very well defined maximum in fall and early winter. Snow may be expected from November to April, fairly frequently, but does not often attain any considerable depth. In the mountains the snowfall is much heavier. At Brussels, snow occurs on about 25 days a year; at Paris, on about 15 days.

A brief description of the climate and weather of this same area, with special reference to military operations, may be found in a recent article by the undersigned, entitled ''The Weather and the War'' (*Journ. Milit. Service Instn.,* Vol. 61, Sept.-Oct., 1917, pp. 145-155).

R. DEC. WARD

AUSTRALASIA AND OCEANIA

Drought in the Gilbert Islands. Serious drought has prevailed in the Gilbert Islands during the past year (*United Empire,* Vol. 8, N. S., 1917, p. 548). The islands (whose annexation by Great Britain in 1915 was noted in the Feb., 1916, *Review,* p. 145), lying in the mid-Pacific athwart the equator, normally enjoy a good rainfall, but the recurrent periods of drought are a bar to their economic development. Drought kills the coconut tree and cuts down the export of copra, the chief item of the insular trade. Continued drought has had even more serious consequences, the inhabitants being at times put to straits to procure sufficient water to support life. To meet emergencies the local government has lately completed on Ocean Island a system of cement cisterns, whose speedy construction, expedited as a result of native forecasts, now assures the supply of the government staff. The natives also have been encouraged to spend upon tanks a part of the money derived from the sale of their lands to the Pacific Phosphate Company. The company, however, has secured them against entire destitution by the erection of a condensing plant where water may be bought in case of drought (Gilbert and Ellice Islands Protectorate: Report for 1914-1915, *Colonial Repts. No. 884,* London, 1916).

An Extraordinary Rainfall Record from the Hawaiian Islands. Cherrapunji, Assam, enjoys world fame for its extraordinary rainfall, averaging 460 inches per annum. In *Science* for November 23, 1917, Douglas H. Campbell calls attention to a rival nearer home (An Extraordinary Rainfall Record, pp. 511-512). Kauai, most northerly of the Hawaiian Islands, boasts a station whose average rainfall for the last five years (1912-1916) is 500 inches. This station is on the summit of Mt. Waialeale, 5,705 feet above sea level. Precipitation is almost constant, and the surface of the region is entirely bog, either open or supporting a growth of low moss-covered trees.

POLAR REGIONS

Discovery of New Islands in the Arctic Archipelago by Stefansson. Two despatches from Stefansson received at the end of last year (from Melville Island, February 17, 1917, and Herschel Island, November 10, 1917, *New York Times,* December 29 and 28, 1917, respectively) tell of important new discoveries that the explorer has made since he was heard from last. These continue the report of his activities from May, 1916, when he stood on the threshold of the new land discovered in June, 1915 (see ***Bull. Amer. Geogr. Soc.***, Vol. 47, 1915, pp. 766-769, and *Geogr. Rev.*, Vol. 2, 1916, pp. 470-471). Proceeding along its western coast he found its northern tip, which he named Cape Malloch, to lie in about 79° N. and 113° W. (see map, Fig. 1). On a later stage of his journey the other corners of this land, which proved to be an island, were located and named as follows: northeastern tip, Cape Mamen, approximately 78° 30′ N. and 108° W.; southeastern tip, Cape Mackay, 77° 50′ N. and 110° W.; southern tip, Cape Beuchat, approximately 77° 15′ N. and 113° W.; southwestern tip, Cape Murray, 77° 55′ N. and 114° 30′ W. This places the new island between Prince Patrick and Ellef Ringnes Islands. The names were evidently given in honor of men of the expedition who lost their lives when trying to reach land after the *Karluk* sank in January, 1914. Continuing in a northeastern direction, presumably past Cape Isachsen of Ellef Ringnes Island, a second new island was discovered on June 13, 1916. The location of its three salient corners, southwestern, northern, and southeastern, are given as 79° 50′ N. and 102° W.; 80° 12′ N. and 100° W.; 79° 40′ N. and 99° W. It therefore lies between Ellef Ringnes and Axel Heiberg Islands. Stefansson also reports the existence of several smaller islands between the second new island and Axel Heiberg Island.

Turning southward from here the explorer's route presumably lay through Hassel Sound, the strait separating Ellef Ringnes from Amund Ringnes Island. Hassel Sound he found to be 15 miles wide at its narrowest part: it is shown as about 5 miles wide on the general map accompanying Sverdrup's account of his expedition of 1898-1902 (''New Land,'' 2 vols., London, 1904), but this representation was intended to be provisional only, as no member of the expedition had traversed it. Continuing, Stefansson entered an area lying on the border of the fields of work of previous expeditions. Such areas are always likely to be inaccurately represented, and Stefansson evidently did not find it otherwise. On April 29, 1853, Sherard Osborn of the Franklin Search expedition of that year, sighted what seemed an extensive land 30 miles or more to the northwest of the northwestern extremity of Bathurst Island. On the maps this figures as ''Finlay Land,'' lying in about 77° N. and 105° W. On April 27, 1901, Isachsen of the Sverdrup expedition and his party saw from the southern extremity of Ellef Ringnes Island a land to the west that extended southward ''as far as the eye could reach.'' They named it King Christian Land and placed it in about 77¾° N. and 102° W. on their map, joining it in hypothetical outline with Finlay Land, thus creating an island some 80 miles long from northeast to southwest and 45 miles wide. This island Stefansson's explorations have now again broken up into its constituent parts. He reports the most southerly point of King Christian Island to lie in 77° 41′ N. and the greatest east-and-west diameter of the island to be 15 miles. The greatest diameter of Finlay Island he says is about 12 miles, and the maximum depth of the sea between the two islands 172 fathoms. The existence of a small island between Paterson Island (76° 50′ N. and 104° 15′ W.) and Finlay Island is also reported.

Proceeding to the west a third new island was discovered on August 3. Its northern tip lies in approximately 77° 55′ N. and 108° 10′ W.; its southern tip in 77° 9′ N. and 107° W. This island therefore lies southeast of the first new island. A month was spent on it, to September 9. The east coast of the first new island was then visited and followed southward and westward around Capes Mackay and Beuchat until Cape Murray was reached on September 23. From here the route probably skirted the northeastern end of Prince Patrick Island and the northern shore of Melville Island until Liddon Gulf was reached on October 16. Stefansson's later movements can only be conjectured. In his second despatch he speaks of an advance made over the sea ice from the northern coast of the first new island, in the spring of 1917. He proceeded from 78° 30′ N. and 110° W. and reached a point 140 miles north-northwest of this. Between these two points the sea bottom ''showed no gradual or other slope away from the land. The depth varied from 444 to 570 meters. There was strong ice pressure but little ice motion as compared with the sea either west of Banks Island or north of Greenland.''

Stefansson next speaks of being at Barter Island (off the Alaska coast, 144° W.) on September 13, 1917. During a westerly gale his vessel went aground and was not refloated until September 27. This date the explorer considered too late for an attempt to get around Point Barrow and thus out of the Arctic seas, so he evidently turned east to winter at Herschel Island, whence the despatch dated November 10 was sent. A recent despatch to the *Toronto Globe* (reprinted in the *New York Times* of March 1) showed him still there on January 31 of this year, planning a sledge expedition over the sea ice north from Cross Island, Alaska (148° W.), and counting on being carried by the westward current to Wrangell Island on the Siberian coast.

The importance of Stefansson's latest work is patent. It has done much toward

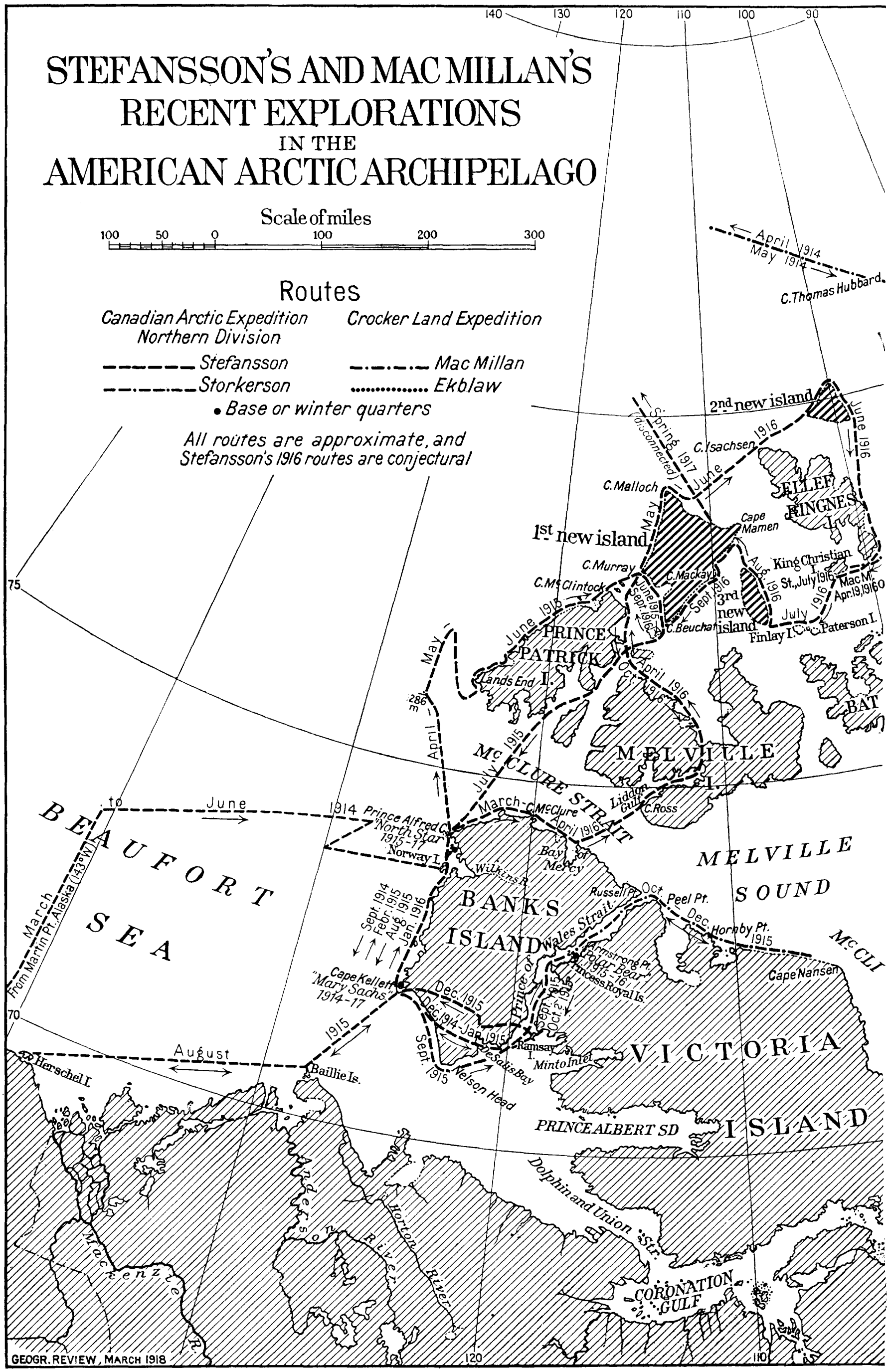

FIG. 1—Sketch map showing Stefansson's and MacMillan's routes in the American Arctic Archipelago, 1914-17. Scale, 1:7,400,000. Stefansson's 1914 and 1915 routes are based on a map in *Rept. Dept. of the Naval Service for Year Ending March 31, 1916*, Ottawa, 1916, p. 79; later routes or the newspaper despatches mentioned in the text. MacMillan's routes are based on various reports, including Lieutenant Green's, abstracted in the next item.

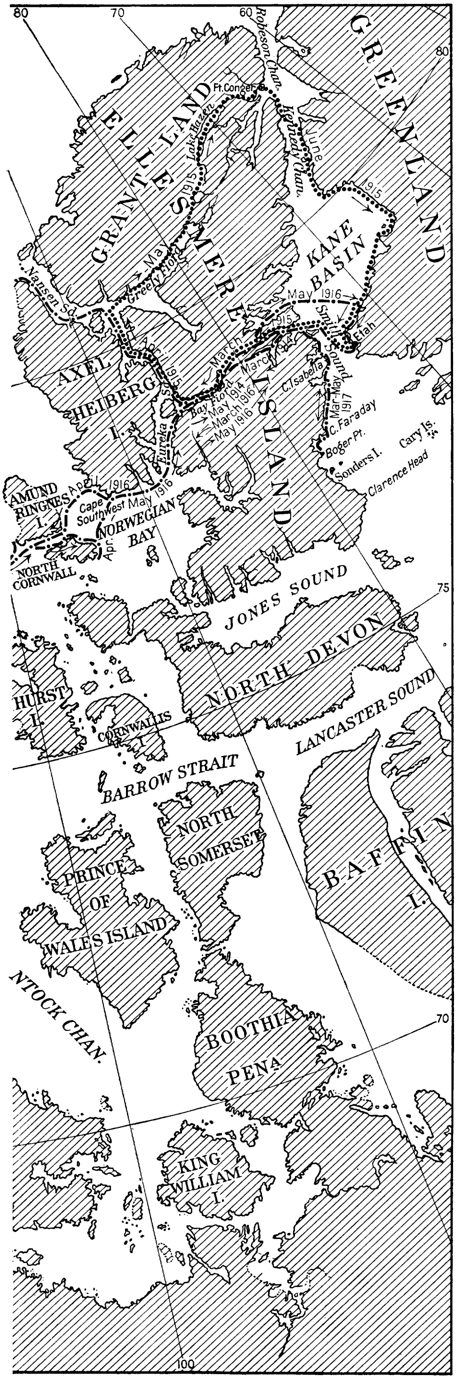

FIG. 1A—Eastern continuation of Fig. 1.

clearing up the question whether the unknown area north of Alaska harbors a land complex or is part of the Polar Basin. His advance northwestward from the first new island, together with his remarkable ice trip over the Beaufort Sea in 1914, his westward loop in 1915 between Banks and Prince Patrick Islands, and MacMillan's trip in 1914 to the supposed site of Crocker Land would all seem to indicate that no land exists west of the known limit of the American Arctic Archipelago. Indeed, his discoveries would seem to define this limit more sharply; his first and second new islands lie on the direct line connecting the outer coasts of Grant Land and Prince Patrick Island, a line which in its simplicity recalls the abruptness with which other archipelago-beset platforms in regions of mediterranean structure—to which the Polar Basin in all probability belongs—break off toward the adjoining seas. However, such conclusions must await the publication of the final reports, to which the scientific world will look forward with the greatest interest.

A Narrative of the Crocker Land Expedition. Lieutenant Fitzhugh Green accompanied the Crocker Land Expedition in the capacity of engineer and physicist. He narrates his experiences in five recent issues of the *United States Naval Institute Proceedings* (September, 1917–January, 1918). The expedition touched Greenland in August, 1913, at Cape York (76° N.), the southern limit of the Whale Sound Eskimos. Thence along the coast stops were made to pick up Eskimo families and dog-teams for the forthcoming work. Proper stops were known to the Eskimos, for the tribal settling-places—as they should be termed rather than settlements—are well established. In the seasonal course of the food-quest migrations, southward for the seal and small game, northward for the caribou and bear, whose skins are as important as their meat, resort is made to the old stopping places. Usually they are selected on favorable topographic sites, on protected spots at the foot of southern exposures. Abundant remains testify to the antiquity of habitation.

With other stops to secure food for the winter the expedition reached Smith Sound but ice conditions prevented progress into Flagler Fiord, the proposed winter headquarters. Here other expeditions had found open water, but in the three summers of Green's stay in the Arctic the ice barrier never lifted from the north of Smith Sound. This is the hard lesson of the North, "one season or two, or even three (are never a criterion of ice conditions in any other season." In this contingency winter quarters were established at Etah (Foulke

Fiord), the nearest point convenient of access to Ellesmere Island and the main objective of the expedition—Crocker Land.

At Etah the physicist's first care was the erection of two meteorological stations, one at the base, the other on the plateau 2,000 feet above. When the narrative was written the records were not available; the narrator, however, comments on the powerful control of wind dirction. Two main types of weather were experienced. With the north wind was cold, clear weather; where the air descended the steep plateau walls adiabatic warming raised the temperature "a merciful amount"; down the fiords the pristine iciness was unmitigated. A south wind invariably meant cloudy weather. Under a swell from the south, the ice cracks, exposing water surfaces of comparatively high temperature from which arises warm air, whose vapor condenses to form an insulating cloud barrier. At such times the weather would be warm and snowy.

Towards the end of the year (1913) preparations were made for the advance on Crocker Land. With the advent of the December moon a party set out to lay caches. By following the coast until solid floes gave a fairway to the opposite land Smith Sound was crossed without difficulty and a supply base made at the ill-famed Cape Sabine. At the base sledges were made and other equipment got ready, work in which the Eskimos instructed in the use of European tools proved highly skillful. On February 7, 1914, the party set out for the great objective. The first attempt failed: a second and successful start was made a month later under the low March sun. The route lay across the difficult crevassed ice of the plateau of Ellesmere Island, down the 5,000 feet of its abrupt descent to Bay Fiord; thence to Cape Thomas Hubbard (see the map accompanying the preceding item). From here on April 15 MacMillan and Green set out across the Polar Sea in search of the phanton land. The going was wretched, the apprehensive natives mutinous. Seventy miles out the white men were cheered by a faint shadow on the northwest horizon. "The Eskimos shook their heads. '*Puksuaq,*' they said—'it's just mirage.' And so it seemed, for in all the speed of our pursuit, the specter grew no nearer. Peary placed Crocker Land 130 miles out. At 105 miles we cached most of our food and ran for it. Two marches more placed us beyond the 150 mile mark. The day was perfect, crystal, clear horizon, and no wind. We climbed the highest berg and saw nothing." Yet on return to land the illusion appeared so realistically that "had we not been out, we too should have announced its discovery and urged its exploration." The farthest point reached was subsequently determined to be 82° 30′ N. and 108° 22.5′ W. Bad weather curtailed attempts at exploration of the coasts southwest and east, and the party went back as it had come, enjoying on the return splendid views of the white ranges of Axel Heiberg Island, discovered by Sverdrup in 1901. In all 1,300 miles were covered in three months. Much game was seen, and at the camp in Bay Fiord bituminous coal was struck.

During the second summer (1914) Green's scientific work included wireless experiments with radio kites and surveying, the latter including a hydrographic survey of Foulke Fiord. During the succeeding winter he was also able to add further to the map of northern Greenland by a survey of the coast as far north as Hall Basin. Results of this survey showed the work done by Hall, Kane, and Peary to be substantially correct with the exception of that part of the coast between Capes Calhoun and Constitution.

Close of the third summer (1915) saw the arrival of the first relief ship, the *Cluett;* the ill-luck attending her has been recorded in the *Review* (Vol. 1, 1916, pp. 145-146, and Vol. 2, 1916, p. 65). On an attempt to secure relief Green and two other members of the expedition later (January, 1916) made their way into South Greenland. Their long journey was carried out under the usual hardships attending Arctic travel, but for the scientific observer there were compensations. A few marches after rounding Cape Holm, the Devil's Thumb of the earlier explorers (74½° N.), the little party entered South Greenland, Greenland modified by Danish influence, a region of great interest for geographers and ethnographers.

Here, at the first settlement, Etusalik, "all was different": here the Eskimos have lost the old arts. "They cannot build snow houses or real rock igloos—have lost the art these four generations. Lumber can be purchased from southern trading stations, and sod-covered walls protect the outside of their wooden huts. They know not how to fashion soap-stone lamps, for the simple reason that the nearest missionary supplies excellent iron kettles. They wear sealskin breeches which are neither handsome nor warm, and sell their bearskins to the traders. With the profits they can buy guns and ammunition."

The sharp change at Cape Holm marks the beginning of a sequence of progressive cultural changes but these seem to depend not only on exterior human interference but also on geographical influences, most particularly climate, which limits the time possible for the various native occupations. In Greenland, however, white intervention arouses particular interest because of the policy by which it is controlled. Nearly half a century ago the Danish Government closed the country to outsiders, in part for economic reasons but chiefly for the protection of the natives and for the maintenance of native initiative.

Besides the general interest in this humanitarian policy Greenland has peculiar interests for the United States. The treaty transfering the Danish West Indies to the United States contained a clause recognizing Denmark's right to extend her economic and political sphere over the entire island. The clause aroused much discussion (see Peary's letter to the *New York Times*, September 11, 1916), for the future significance of Greenland, as American explorers have pointed out, runs along economic and strategic lines. Already the country has a considerable export trade from the products of hunting, fishing, and mining, and development of the last in particular has only just begun. Lying between Europe and North America Greenland occupies a strategic location doubly significant by the splendid secure fiord harbors (Godhavn is open, at least in certain seasons, ten months of the year); and there is coal, graphite, and petroleum. "Greenland is going to have a chapter in naval history."

WORLD AND LARGER PARTS

The World's Food Supply. Under this title G. B. Roorbach outlines salient facts of food production in relation to the present situation (*Annals Amer. Acad. Polit. and Social Sci.*, Philadelphia, November, 1917). While a great variety of products enter into the world's supply, the number of staples is limited: they are the cereals rice, wheat, millet, rye, barley, the chief foods both in production and food value; corn, oats, and beans; potatoes; sugar; and meat, the least considerable of the staples. With the exception in part of sugar and rice the north temperate zone is the great producer of the staple foods, and Europe—a fact apt to be obscured by the industrial predominance of the continent—is the greatest producer of all, excluding rice, millet, and corn. In 1913 Europe contributed 65.4 per cent of the world's supply of wheat, oats, rye, barley; 90.5 per cent of the potatoes; 43 per cent of the sugar; 31.8 per cent of cattle. Even the most densely peopled and highly industrial countries produced more than half their own requirements. The percentage ratio of production to requirements for various countries is: United Kingdom, 53; Belgium, 57; Germany, 88; France, 93; Austria-Hungary, 98; United States, 100; Russia, 110; Canada, 123; Argentina, 148.

We are probably more familiar with Europe's large figures of food importation. If we add those for home production the seriousness of the European food situation needs little further demonstration. Naturally this is greatest in the case of wheat. On the average in the last three pre-war years (1911-13) the Western Allies imported 344,000,000 bushels of wheat, an amount about three-fifths of their total consumption. The neutral European countries imported 67,000,000 bushels, about one-third of their consumption. Russia, leading in the world's export, is now ruled out as a source of supply. Rumania, Bulgaria, Turkey are tributary to the Central Powers; according to pre-war reckoning they would make up the greater part of the German deficiency. The United States and Canada ranked next to Russia in the 1911-13 figures and Argentina next, but unfortunately the last, with great fluctuations of production, is not a dependable source. India and Australia together exported about as much as Canada, but Australia is now much hampered by shipping difficulties.

In corn (maize) production the United States is unique, accounting for over 70 per cent of the world's supply. Cultivation and consumption as human food are both susceptible of increases: corn is the food lending itself best to food conservation measures. Rice, the great staple of the East, is comparatively unimportant in the food supply of the West, though its food value is very high. It is, however, noteworthy that production in the United States has been considerably increased. This is also the case with another great product of the East, the soy bean. During war time meat production always diminishes rapidly. In the European countries wealthy enough to indulge in meat eating the situation is now very serious. Moreover the sacrifice of cattle is accompanied with loss of dairy products. Exportation from the United States in 1916-17 has been notable; meat exports increased fourfold, and enormous expansion was shown in butter, cheese, and condensed milk. While the late growth of meat consumption has greatly outdistanced the growth of production, the very great production of the United States should be remarked. It amounted to between three and four times the combined output of Australia, New Zealand, Argentina, and Canada. It is by the United States, with a normal excess of production of wheat, corn, barley, rye, meat, and potatoes and with a comparatively short voyage to Europe, that the great effort of food production and conservation must be made to meet the crisis in the world's food supply.

PHYSICAL GEOGRAPHY

Fog Formation. The formation of fog and mist, with reference to forecasting the occurrence of these phenomena, has been considered by Major G. I. Taylor of the Royal Flying Corps (*Quart. Journ. Royal Meteorol. Soc.*, Vol. 43, 1917, pp. 241-268). ''Smoke fogs'' require a very light wind and an inversion of temperature near the ground so that the fog shall not be dispersed vertically by turbulence or by convectional currents. The second of these conditions practically limits the formation of smoke fogs to winter.

Fogs which consist of water drops are the most frequent and the most complicated. Condensation is due either to cooling or to the mixture of two masses of air having different temperatures and containing different amounts of water vapor. Major Taylor spent six months during the summer of 1913 on the whaling ship *Scotia*, carrying out scientific work on the Grand Banks of Newfoundland. In his study of fog he was able in certain cases to secure data from the air above the surface of the water by means of kites. In every one of these cases the fog was due to air blowing off warm water onto the colder water of the Banks. The author is of the opinion, however, that cold air blowing over warm water may also give rise to fog. Observations of the height of these Grand Bank fogs showed that the fogs are often so shallow that the top of a ship's mast is in bright sunlight when it is impossible to see more than 80 or 100 feet along the deck. Occasionally, however, the vertical thickness of the fog may reach 3,000 feet. A third class of fog includes those formed on land, at night, during light winds or in calms. These are generally known as radiation fogs.

Major Taylor, who is attached as meteorologist to the Royal Flying Corps, gives special attention to the problem of fog forecasting. This is, of course, a very practical matter in aviation. He has prepared a ''fog prediction diagram,'' in which the air temperatures and depression of the dew point are shown by the abscissas and the ordinates respectively. A series of lines is drawn across the diagram indicating conditions favorable or unfavorable for fogs during the night. The author believes that the use of this diagram should lead to a considerable improvement in local radiation fog forecasts in the warmer months. In winter, at temperatures below freezing, the wet-bulb readings are, of course, not reliable. R. DEC. WARD

Effect of Short-Period Variation of Solar Radiation on the Earth's Atmosphere. H. Helm Clayton, long a student of weather periods, has recently demonstrated the connection between short-period changes of the sun's heat and terrestrial temperatures (*Smithsonian Misc. Colls.*, Vol. 68, No. 3, May, 1917). Clayton has compared the variations in solar radiation found by Abbot, Fowle, and Aldrich in 1913 and 1914 with temperature and pressure departures for many stations over the world. The temperatures of the tropics rise and fall two days behind the increases and decreases of sun's heat. Corresponding lowering of pressure reaching a minimum in a day after the maximum temperature, occurs as the expanded air apparently flows polewards in the upper levels. This overflow from the tropics seems to go chiefly to the established sub-permanent anticyclones over the coldest parts of the oceans in about latitude 35°, for there the pressure rises most. With this rise there is a fall in temperature in the eastern part of the anticyclone and a rise in the western, on account of the increased strength of the winds. Four to five days after the increase in solar radiation there appears to be a tendency to minimum pressures in sub-polar low-pressure centers of action. It seems to be true for the earth, therefore, that an increase in sunlight reduces the pressure in the low-pressure areas and raises that in the ''highs.'' Over North America the result thus may be increased cold in winter and heat in summer.

That this effect operates on the smaller extra-tropical cyclones and anticyclones has been shown by M. A. Veeder and Ellsworth Huntington (*Geogr. Rev.*, Vol. 3, 1917, pp. 188-211 and 303-316).

There seems to be in both hemispheres an anti-clockwise elliptical movement of the centers of highest temperature departures. This movement, probably accompanied by movements of the centers of action, seems to be responsible for the masking of the effect of solar variations on the weather of a single place. Analyzing the solar changes and, independently, the temperatures of Buenos Aires, a coincident period of 22 days has been found, with a possible minor one of 11 to 14 days. As the period of solar rotation is 27 days this seems to be independent of the successive reappearances of sunspots.

CHARLES F. BROOKS

GEOGRAPHICAL NEWS

PERSONAL

PROFESSOR R. F. GRIGGS of Ohio State University gave a lecture on February 8 before the Geographic Society of Chicago on "The Mt. Katmai (Alaska) Explorations."

DR. JESSE WALTER FEWKES has been appointed Chief of the Bureau of American Ethnology in Mr. Hodge's place, whose resignation is noted below.

MR. FREDERICK WEBB HODGE, who has been the head of the Bureau of American Ethnology of the Smithsonian Institution since 1905, has resigned to accept a position in connection with the Museum of the American Indian, Heye Foundation, of New York City. Mr. Hodge's resignation took effect on February 28.

MR. ROBERT CUSHMAN MURPHY of the Brooklyn Institute Museum read a paper before the New York Academy of Sciences on February 11 on "The Sea Birds of the Southern Hemisphere: Some Systematic and Distributional Problems."

DR. FRIDTJOF NANSEN, whose presence in this country as Minister Plenipotentiary of Norway on a Special Mission to the United States was noticed in the November, 1917, *Review* (p. 404), read a paper before the Washington Academy of Sciences on January 31 entitled "Changes in Oceanic and Atmospheric Temperatures and Their Relation to Changes in the Sun's Activity."

DR. C. S. SCOFIELD of the U. S. Department of Agriculture read a paper before the Botanical Society of Washington on December 4, 1917, on "Geographical Aspects of Haitian Agriculture."

PROFESSOR WALTER S. TOWER of the Department of Geography of the University of Chicago has recently been commissioned in the Meteorological Section of the Signal Corps of the Army and been ordered into active service.

PROFESSOR R. D. SALISBURY, head of the Department of Geography of the University of Chicago, was presented with the Helen Culver gold medal of the Geographic Society of Chicago on January 26.